

What is claimed is:

1. A medical delivery device comprising:
 - a pump having a minimum and maximum delivery volume;
 - a controller configured to:
 - determine a first volume of infusible medical fluid delivered; and
 - based on the first volume of infusible medical fluid delivered, determine a time and volume for delivery of a second volume of infusible fluid.
2. The medical delivery device of claim 1 wherein the infusion device further comprising a disposable housing assembly and reusable housing assembly.
3. The medical delivery device of claim 1 wherein the reusable housing assembly further comprising a locking ring assembly, wherein the reusable housing assembly releasably engages the disposable housing assembly by way of the locking ring assembly.
4. The medical delivery device of claim 3 wherein the locking ring assembly comprising:
 - a spring;
 - a tab that connects to the spring; and
 - a magnet that connects to the tab.
5. The medical delivery device of claim 2 wherein the disposable housing assembly further comprising a reservoir wherein the pump effectuates the movement of infusible medical fluid from the reservoir to a volume sensor assembly.
6. The medical delivery device of claim 1 wherein the pump is driven by a shape memory alloy.
7. The medical delivery device of claim 1 wherein the infusion pump of claim further comprising a split ring resonator antenna.
8. The medical delivery device of claim 1 further comprising a volume sensor assembly for determining the first volume and the second volume of infusible medical fluid delivered.
9. The medical delivery device of claim 8 wherein the volume sensor assembly comprising:
 - an acoustically contiguous region having a volume that varies based upon the quantity of infusible fluid received from the reservoir, and
 - an acoustic energy emitter configured to provide acoustic energy at a plurality of frequencies to excite a gas included within the acoustically contiguous region.
10. A controller for a medical delivery device for delivering a medical fluid comprising:
 - a volume sensor assembly for determining a first volume of fluid delivered;
 - a processor for determining the difference between a desired first volume of fluid to be delivered and the actual first volume of fluid delivered; and
 - a processor for determining a schedule and volume for delivering a second volume of fluid based on the difference.
11. The controller of claim 10 wherein the volume sensor assembly comprising:
 - an acoustically contiguous region having a volume that varies based upon the quantity of fluid received from the reservoir, and
 - an acoustic energy emitter configured to provide acoustic energy at a plurality of frequencies to excite a gas included within the acoustically contiguous region.
12. A medical infusion device for delivering an infusible medical fluid comprising:
 - a pump having a minimum and maximum pulse volume;
 - a controller configured to:
 - calculate an approximately constant trajectory for delivering infusible fluid, the approximately constant trajectory comprising at least one volume of fluid;
 - determine a schedule for delivering the at least one volume of fluid according to the approximately constant trajectory, wherein the schedule defines an interval and a volume of infusible fluid for delivery; and
 - a volume sensor assembly, the volume sensor assembly configured to directly measure the at least one volume of fluid delivered, wherein the system recalculates the approximately constant trajectory based on the volume of fluid delivered, wherein the volume sensor assembly comprising:
 - an acoustically contiguous region having a volume that varies based upon the quantity of infusible fluid received from the reservoir; and
 - an acoustic energy emitter configured to provide acoustic energy at a plurality of frequencies to excite a gas included within the acoustically contiguous region.
13. The medical infusion device of claim 12, wherein the controller further configured to:
 - determine a first volume of infusible medical fluid delivered; and
 - based on the first volume of infusible medical fluid delivered, determine a time and volume for delivery of a second volume of infusible fluid.
14. The medical infusion device of claim 12 wherein the infusion device further comprising a disposable housing assembly and reusable housing assembly.
15. The medical infusion device of claim 12 wherein the reusable housing assembly further comprising a locking ring assembly, wherein the reusable housing assembly releasably engages the disposable housing assembly by way of the locking ring assembly.
16. The medical infusion device of claim 15 wherein the locking ring assembly comprising:
 - a spring;
 - a tab that connects to the spring; and
 - a magnet that connects to the tab.
17. The medical infusion device of claim 13 wherein the disposable housing assembly further comprising a reservoir wherein the pump effectuates the movement of infusible medical fluid from the reservoir to a volume sensor assembly.
18. The medical infusion device of claim 12 wherein the pump is driven by a shape memory alloy.
19. The medical infusion device of claim 12 wherein the infusion pump of claim further comprising a split ring resonator antenna.
20. The medical infusion device of claim 12 further comprising a volume sensor assembly for determining the first volume and the second volume of infusible medical fluid delivered.
21. The medical infusion device of claim 20 wherein the volume sensor assembly comprising:
 - an acoustically contiguous region having a volume that varies based upon the quantity of infusible fluid received from the reservoir, and